June 5 – This summer should prove to be an interesting experience for the ATO, and not just because record levels of severe weather are forecast. System Operations is delivering a revolutionary tool to traffic management specialists today to help them mitigate the effects of this summer's thunderstorms.

"This is history in the making," says Ellen King, manager of System Efficiency at the Air Traffic Control System Command Center.

Until now, traffic management specialists had primarily used ground delay programs to deal with the problems caused by severe weather. A GDP, implemented for a particular destination airport, controls flights destined for that airport by adjusting their departure times. When a GDP is used in support of severe weather avoidance procedures, airplanes headed to airports with large flight volume are managed to reduce traffic flows through the impacted area regardless of whether their path takes them through an area of thunderstorms or not.

For example, if thunderstorms pop up over the Ohio Valley, a GDP might be run for Philadelphia and Newark International Airports. The GDP, the thinking went, would reduce the number of planes flying across Ohio and minimize the complexity of the workload for controllers who have to reroute flights around the convective weather. The problem is that a flight planned from Miami to Philadelphia would suffer the same delay as a flight from Chicago to Newark, even though the former would follow a route hundreds of miles from the severe weather causing the GDP.

GDPs in support of SWAP also fail to distribute delays equitably to all users of the National Airspace System. Because traffic management specialists want to moderate as much traffic as possible across a particular area, they initiate GDPs at the nation's busiest airports. Yet, general aviation and business aircraft don't normally fly into big airports and often avoid any delay resulting from severe weather. Sometimes, they even fly right through the affected airspace on their way to Wings Field Airport in Philadelphia or Linden Airport just north of Newark.

As of June 5, though, traffic management specialists have the use of Airspace Flow Programs to meter traffic streams when thunderstorms impede the NAS.

AFPs can be thought of as GDPs in the air. Rather than delaying flights headed to a particular airport, an AFP controls flights routed through a specific section of airspace. With an AFP in place over the Ohio Valley, planes headed across Ohio would be delayed, while flights scheduled to arrive in Philadelphia from Miami would travel unimpeded.

AFPs also provide a much more evenly distributed solution for customers. Instead of the large airlines suffering all the delays caused by severe weather, general aviation aircraft will be constrained by AFPs if their routes take them through areas affected by thunderstorms.

“With an AFP everyone shares in the delay, everyone shares in the pain that’s going to be caused,” says Gary Dockan, flight dispatch training instructor for US Airways. “AFPs are very effective and they’re very equitable.”

AFPs also have the advantage of presenting airlines with choices, something GDPs in support of SWAP never did. An airline can elect to reroute an affected flight around an AFP, if it decides that is a more efficient operation.

“They can go around it or they can say the most efficient thing for me to do is to take however many minutes of delay on the ground and just fly through it,” King says. “But they get to choose that.”

“The airlines really like options a lot, so we want to give them as many options as are available,” she adds.

Those options stand to save the airlines a decent amount of money. Dockan says that Air Transport Association analysis has shown that one minute of delay costs an airline about $50 per airplane. So even though human-in-the-loop testing only showed a five or ten minute reduction in delay time for the big airlines, those five or ten minutes multiplied by 100 flights could easily mean $25,000 or $50,000 in reduced expense.

“It’s big money savings,” Dockan says. “It’s going to cost us anyway, but we’re reducing the amount that we're going to have to pay because of the delay. We’re going to lose money but we’re not going to lose as much.”

“This program is win-win from my perspective,” he adds.

Currently there are six Flow Constrained Areas in which AFPs can be used to moderate traffic flow. They are all located in the Eastern half of the United States. One group covers parts of Ohio, West Virginia and Virginia before ending over the Southeast coast of North Carolina. The other group starts over the New York shore of Lake Ontario, extends south to the border between Maryland and Pennsylvania and then stretches southeast over Delaware and the Atlantic Ocean.

System Operations plans to allow traffic management specialists to implement these AFPs for a period of time. If they prove successful, specialists will be given the freedom to “draw a box” around any piece of airspace, in three dimensions, and run an AFP for it.